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FOREIGN OWNERSHIP AND PERFORMANCE: EVIDENCE FROM A PANEL OF ITALIAN FIRMS

by Chiara Bentivogli* and Litterio Mirenda*

Abstract

The paper studies the impact of foreign ownership on a firm's economic performance. We use a unique panel dataset to test the foreign ownership premium by comparing our sample of firms based in Italy and owned by a foreign subject with a sample of purely domestic firms that, in order to have a proper counterfactual, were selected using propensity score matching. Our difference-in-differences results show the existence of a premium for the size, profitability and financial soundness of the foreign-owned companies. The premium increases with time, is concentrated in the service sector, and disappears if the foreign investor is based in a fiscal haven.

JEL Classification: F23, F61.

Keywords: multinational enterprise, ownership, foreign direct investment, firm performance.

Contents

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1. Introduction[1]

Foreign direct investment (FDI) plays an important role in the world economy. In 2014 FDI stock reached a volume of more than US$ 26 trillion, rising from an average of US$14 trillion in the three years before the financial crisis; employment of foreign affiliates reached 75 million (Unctad, 2015).

The size and pervasiveness of FDI in the world motivate the analysis of the effects of FDI on national economies and, in particular, the performance comparison of foreign-controlled firms *vis-à-vis* domestic-owned ones in order to assess the existence of systematic differences due specifically to foreign acquisition. The topic is of interest for economic policy, as it could give analytical support to the implementation of policies to attract or discourage foreign investment.

Two main streams of theoretical literature dealing with different performances of foreign-controlled firms can be identified:

i) the first one is related to the general hypothesis of the existence of advantages for multinational companies (MNEs) over purely domestic firms (Hymer, 1960; Dunning, 1988). In a context of within-sector firm heterogeneity in productivity, only the more productive companies engage in FDI, given that entry into a foreign market involves high fixed costs (Helpman et al., 2004). This, in turn, implies that improvement in the performance of a foreign-owned firm depends on the transfer of proprietary assets from its MNE parent company (ex-post forward linkages). According to this stream of literature, foreign investors are indeed able to transfer superior technology and organizational practices to potential local subsidiaries (Barba Navaretti and Venables, 2004), thus generating a foreign ownership premium (FOP);

ii) the second one derives from the market for corporate control literature; this stream highlights the importance of the ex-ante selection bias as the key factor that explains the different performance of foreign-controlled firms. According to Manne (1965) well-performing foreign firms choose underperforming companies for their acquisitions, (negative selection) in order to remove inefficient managers and fully exploit the firm's potential. Negative selection could also emerge from high information asymmetries about the quality of the acquired local company. It could also be the case that, on the contrary, international acquisition only happens to the (ex-ante) best domestic firms, so that their superior performance is partially

[1] The views expressed in the articles are those of the authors and do not necessarily correspond to those of the Bank of Italy. We would like to thank Alessandro Borin, Ines Buono, Andrea Carboni, Sauro Mocetti, Valeria Pellegrini and two anonymous referees for their useful suggestions and comments.

due to the selection process (positive selection).[2] Guadalupe et al. (2012) explain selection in terms of complementarities between foreign and domestic firms' characteristics. As an example they cite the introduction of a new product into a foreign market through the acquisition of a domestic firm, which will be more valuable the greater the marketing abilities of the acquired firm.

The empirical tests of these two strands of literature on foreign acquisition use very different strategies. While the positive/negative/complementary selection hypotheses require a test on the ex-ante differences (in terms of economic performance and structural features) between the foreign acquired firms and the purely domestic ones, the foreign ownership premium (FOP) hypothesis entails the identification of the causal effect of foreign acquisition on the ex-post performance of the foreign-owned firm. However, the two theories discussed are not mutually exclusive but rather coexist. This implies that FOP testing requires controlling for the endogeneity of the selection process, in order to disentangle the differences in performance due to ex-ante factors from those due to the acquisition itself.

Empirical studies have investigated the selection process with mixed conclusions. Many authors find evidence of positive selection. Looking at the Spanish case, Guadalupe et al. (2012) find evidence of foreign acquisition of the most productive firms within industries; Blonigen et al. (2012) find a higher probability of foreign acquisition of domestic companies with higher productivity levels some years before the acquisition. Weche Gelübcke (2013) finds that German manufacturing firms with above average productivity are more likely to become targets for foreign takeovers. At the same time, Weche Gelübcke shows that the exact opposite is true regarding profitability, as very low performing firms are MNEs' favourite targets. Evidence of negative selection due to information asymmetries is less common. One example is the analysis of Gioia and Thomsen (2004) which identifies negative selection for Danish companies acquired by MNEs in the nineties.[3] However, a major limitation of these studies is that, in general, positive or negative selection is analysed without considering the element of price in driving the acquisition decision together with performance characteristics. Indeed, the price could make an acquisition a good deal or a bad deal depending on the associated firm's 'quality'.

[2] Negative and positive selection are also mentioned in the literature as, respectively, 'lemon-grabbing' and 'cherry-picking' effects.

[3] For Italian firms, Mattevi (2014) finds positive selection: before the acquisition, foreign- controlled firms are bigger and more export-oriented than domestic firms. Crinò and Onida (2007) find positive selection only in manufacturing firms in the Italian region of Lombardy. Castellani and Zanfei (2004) do not find positive selection for a sample of Italian manufacturing firms in the years 1997-2000.

Most of the empirical studies on foreign ownership premium converge on the its existence, mainly in productivity and wages. Arnold and Javorcik (2009) find that a set of performance variables for Indonesia, including wages and productivity, increase under foreign ownership. Guadalupe et al. (2012) find that, after controlling for selection, acquired firms increase their process innovation. Girma and Gorg (2007) find positive wage effects for UK companies after an acquisition by a US MNE. Criscuolo and Martin (2009) find that US- owned plants have a significant productivity advantage in the United Kingdom, in relation to both British MNEs and other foreign- owned plants. Bandick et al. (2014) find FOP for foreign-controlled firms' R&D in Sweden. [4]

This paper belongs to the FOP vein of literature: we test the existence of a causal relationship between foreign acquisition and the economic performance of the acquired Italian firms. Following previous works, we select an identification strategy that allows us to control for the endogeneity of the selection process. Our contribution to this strand of literature is mainly the database that we use and the variables chosen as performance indicators:

i) we update previous empirical work by building and exploiting a matched firm-shareholder panel containing information on firms' balance sheets and on the shareholders; the dataset is obtained from the administrative register and includes almost all the Italian limited companies for seven years (from 2007 to 2013). Previous works mainly use small samples often focused on a single industry (e.g. Guadalupe et al. (2012) use a panel of manufacturing firms, Girma and Gorg (2007) focus on electronics and food and Piscitello and Rabbiosi (2005) work on manufacturing). Moreover, this is the first empirical FOP analysis of the Italian economy for the period that covers most of the recent economic crisis. Studying FDI during the most recent crisis is interesting, since foreign acquisition has been an important part of firms' toolboxes for reacting to the crisis. On the other hand, the crisis should not distort the results of the analysis because our empirical strategy (see below) controls for the heterogeneous effects of the crisis on the firms in our sample;

ii) we test FOP on selected balance sheet indicators in order to investigate the effect of FDI on three different features of a firm's performance: size, profitability and financial soundness. These characteristics are of interest for policy purposes as they complement the analysis on FOP based on productivity and wages, given that productivity and wage premiums have been extensively studied up to now.[5] Indeed, size is an important source of competitive advantage for several reasons,

[4] For Italy, Piscitello and Rabbiosi (2005) find FOP on labour productivity in the nineties, while Benfratello and Sembenelli (2006) exclude it.

[5] See the survey of the literature on FOP discussed above.

the most important of which is the exploitation of economies of scale. Secondly, profitability is the ultimate indicator of a firm's success and the main engine of an entrepreneur's activity. Lastly, financial soundness is often disregarded by the literature, yet it is crucial to ensure a steady growth for a firm and to insulate it from market volatility. Specifically, we consider net sales as a proxy for size, return on equity and cash flow on assets as measures of profitability, and financial debt on assets together with a comprehensive credit risk indicator to identify financial soundness.

In order to evaluate FOP, our empirical strategy is to apply a difference-in-differences (DID) methodology considering foreign participation as the 'treatment'. This allows us to control for all observable and unobservable time-invariant variables that influence the acquisition decision and the outcome. As the literature on the selection process points out, we are still left with the problem of non-random sample selection. We approach this problem by combining DID with propensity score matching (PSM), which restricts the control sample to firms with similar observable pre-acquisition characteristics. These firms are used as a counterfactual, i.e. they proxy how the foreign owned firms would have behaved had they not been acquired by foreign firms.

PSM and DID have been widely used in the FOP literature, but as far as we know they have been applied to other performance variables, or to test the effects of an internationalization strategy on investing firms. Among others, the above-mentioned Girma and Gorg (2007) use PSM and DID to test FOP on wages, Arnold and Javorcik (2009) on productivity, investment, employment, and wages, Guadalupe et al. (2012) on productivity, and Bandick et al. (2014) on R&D intensity after acquisition. Borin and Mancini (2015) use the PSM-DID strategy to test the foreign direct investment effect on investor performance. Despite the use of the same empirical strategy, a one-to-one comparison of our results with those on productivity and wages is hampered by the different information content of our outcome variables. Nonetheless, we believe that our findings can strengthen the general result for FOP in terms of the sign of the causal effect.

Looking at our results, our difference-in-differences matching estimates indicate that acquisition leads to better company results: several indicators of firms' performance improve after FDI, and the effect increases over time. Moreover, the effect of FDI on performance is significant only in services and disappears if the foreign investor is based in a fiscal haven.

The rest of the article is organized as follows: Section 2 describes the dataset and presents some preliminary statistics. Section 3 outlines the empirical strategy, while Section 4 focuses on econometric results and presents some robustness tests. Section 5 concludes.

2. Data description

Testing FOP for the Italian case clashes with the fact that there is no ready-to-use dataset. Although some databases report FDI data at firm level, they unfortunately have some shortcomings for our purposes,.[6] The major limitation of these databases is that they only report data on foreign-owned firms, thus limiting the possibility to identify a control sample.[7] In addition, these sources only provide (with some limits on access and a fee in some cases) a few performance variables and/or exclude some industries. Other datasets that contain information both on domestic and foreigncontrolled firms are either small panels (like the EFIGE survey) or cross sections only containing information on specific internationalization issues (like the the Bank of Italy's INVIND survey).[8]

In order to overcome these shortcomings we combine two different panels of data. The first one is the Infocamere database, which is taken from Italian official business registers managed by the association of Italian Chambers of Commerce. It contains exhaustive, current and historical vital statistics on firms and their ownership structure (domestic and foreign shareholders, participation shares and so on) covering about 1.12 million unlisted limited companies for 2010. Given its coverage, the Bank of Italy uses it to feed a register of foreign-owned firms, and to extract the sample for Direct Reporting (a survey used to compile the balance of payments statistics on FDI) from it. The second dataset is Cerved, a company accounts data system provided by the Cerved Group, which collects companies' balance sheets and indicators. The Cerved database covers a very large portion of Italian limited companies (about 965,000 balance sheets for 2010) providing detailed company balance sheet data.

In order to build our panel we extract a seven-year subset (from 2007 to 2013, the latest available year) from the Infocamere dataset and do some cleaning when the country of investor is missing and for other problems related to the administrative nature of the data. Then from the Infocamere subset we identify a group of firms with the following characteristics: 1) companies subject to foreign direct investment for the first time in 2010;[9] 2) the FDI gives a foreign investor a

[6] Among databases for Italy on FDI, there are the BOP-FDI dataset produced by the Bank of Italy, FATS data produced by the National Statistical Institute (Istat), and Reprint, produced by the Politecnico di Milano and R&P.

[7] For the year 2010 Reprint data count 8,396 foreign-owned firms (of which 7,658 are foreign-controlled firms), inward FATS data count 13,741 foreign-controlled firms and the Bank of Italy 25,550 foreign-owned firms.

[8] See Bentivogli et al. (2014) for details on the differences (participation/control, industries included, ultimate/immediate counterpart, and so on) among the available databases for Italy.

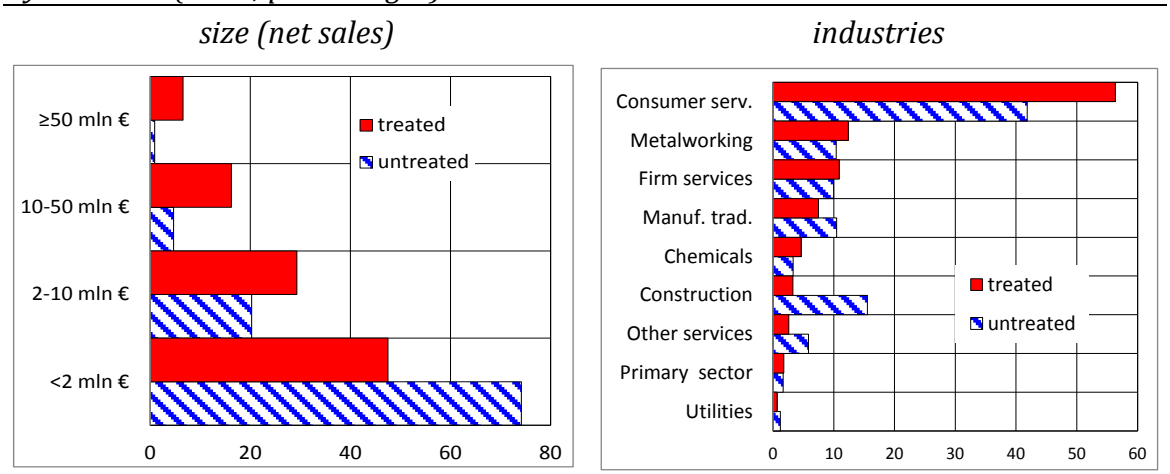
[9] The choice of 2010 allows us to have enough data before and after FDI.

control share (≥ 50%); 3) companies remain under foreign control in the three years following 2010. This group of firms represents our 'treated' group (780 firms in 2010). We then merge this group with the Cerved database in order to attribute to each firm its annual balance sheet information for the whole period (2007-2013). Finally, we get a seven-year panel of 4,987 observations in which treated companies are observed for three years (from 2007 to 2009) before the treatment and for four years (from 2010 to 2013) after the treatment.

As far as purely domestic firms are concerned, we extract them from the Cerved database, with the constraint that they had no foreign investor for the whole period 2007-13 (checked with Infocamere).[10] This panel amounts to 2,903,794 observations.

Graph 1 plots the distribution by the size classes and industry groups of the two samples of data in 2009, one year before the foreign acquisition. It provides some evidence of a concentration of treated firms in the groups of a greater size, while 74% of the untreated firms have yearly net sales of at most € 2 million. Moreover, foreign acquisition is oriented towards specific sectors, i.e. consumer services, metalworking and firm services.

Graph 1 – Distribution by size and industry of treated firms and those that stay purely domestic (2009; percentages)



Source: Infocamere and Cerved.

Graph a1 in the Appendix provides some evidence on the pre-acquisition difference between the two samples. We consider the following group of performance variables: i) net sales, a size variable; ii) ROE, return on equity, a profitability indicator; iii) value added to labour cost, which measures firms' competitiveness in terms of labour cost; iv) financial debt on assets, a measure of the financial struc-

[10] We apply some filters to Cerved data in order to select active, "comparable" companies. Financial (including holdings) and real estate companies have been excluded from the analysis.

ture and, indirectly, of financial soundness. We also consider some variables that proxy the structural characteristics of companies: i) knowledge intensity (intangible assets/total assets), a measure of the level of knowledge capital (e.g., brands, trademarks and patents) employed in the business; ii) vertical integration (value added/net sales), an indicator that proxies the number of stages of the production process performed within the confines of the firm, in relation to those carried out externally; iii) age.[11] These variables, together with other controls, have been used in the probit model of the PSM procedure (see section 3).

In order to smooth the tails of the distribution and to eliminate some extreme outliers, we winsorize ROE at the 1% and 99% levels. Nevertheless, after winsorization, ROE still presents very long tails (with a mean of -1.2, and values ranging from -600 to 167); this feature is due to the high sensitivity of the ratio as equity reaches low levels, following for instance a sequence of negative economic results. Therefore, in order to handle the indicator more easily, we do some smoothing with a percentile filter for the ROE by replacing each data point with its percentile rank.

In Graph a1, in the left-hand column, pre-acquisition means (2007-09) of these variables for foreign-controlled (dotted lines) and purely domestic firms are compared. A mixed picture emerges: the former are older and have a greater size and a smaller financial debt on assets ratio, but lower profitability. Thus the graphic evidence of ex-ante characteristics does not confirm that positive selection is present in all the performance variables.

3. The strategy

The empirical strategy aims at investigating the effect of an FDI (the treatment) on the economic performance of a foreign-owned local firm. Let $FDI_{it} \in \{0,1\}$ be an indicator of whether firm i has been acquired by a foreign investor at time t, and let y_{it+s} be a generic measure of the performance at time $t+s$, $s \geq 0$, following the treatment. Let y'_{it+s} also denote the value of our generic measure if the firm has not been foreign- invested. The causal effect of foreign ownership for firm i at time $t+s$ is then defined as $y_{it+s} - y'_{it+s}$. Unfortunately, y'_{it+s} is unobservable for the treated units. Following the microeconometric evaluation literature, the average effect of FDI on the performance of a local firm can only be based on an estimate of the counterfactual $E\{ y'_{it+s} \mid FDI_{it} = 0\}$, obtained by averaging the performance results of the firms that remained in domestic hands. Such approximation may be considered valid if there are no observable and unobservable effects that are correlated both

[11] See Table a1 for a complete description of the variables.

with the FDI selection and with the performance of the firm and that are not controlled for. Since a takeover decision by foreign investors is not random, a comparison of domestic and foreign-owned firms may suffer from endogeneity and selection bias.

In fact, performance gaps could be related to systematic bias, for instance, in size or industry. The distribution of such measures for MNEs compared with purely domestic companies also differs. Usually MNEs are concentrated in industries with large firm-level economies of scale, low plant-level economies of scale (e.g. chemicals), and high transport costs. These industries might generally be more productive than the average (Barba Navaretti and Venables, 2004). At the same time, there could be industries with high barriers to entry for non-domestic firms (utilities are a classic example). Indeed, foreign-owned and purely domestic firms may be different in many ways, most of which are difficult to observe and may be correlated with the probability of being subject to an FDI and with the performance variable.

Our strategy takes into account all these caveats by combining two different techniques: a difference-indifference (DID) estimation and a propensity score matching (PSM). The first one allows us to handle endogeneity related to time-invariant unobserved effects. The credibility of the DID estimator crucially relies on the assumption that in absence of the treatment, the average outcomes for treated and controls would have followed parallel trends over time. In order to address this concern and to select a more appropriate control sample we adopt a propensity score matching methodology that pairs each treated firm with 'similar' control units. This approach should strengthen the parallel paths hypothesis, allowing us to control for time-variant pre-treatment observables. The validity of PSM also rests on the conditional independence assumption (CIA). CIA holds when, conditional on the observed covariates used in the PSM, assignment to treatment is independent of the outcome. Unfortunately, this assumption is not directly testable, but we can assume it if we believe that we have included all the relevant variables in the PSM. We discussed the variable choice in chapter 2, and from this viewpoint we are confident about our selection of variables. Other tests on the quality of matching are presented in paragraph 4.1.

In the PSM we match FDI firms (treated) with non-FDI firms (controls). Specifically, we adopt nearest-neighbour matching, selecting the non-FDI firms with a (predicted) probability of being treated that is closest to that of the FDI firms. For each treated unit, we match the ten nearest neighbours, allowing a given non-FDI firm to be matched to more than one FDI firm. In section 4.3 we discuss the main results using an alternative matching procedure.

Up to now, the literature does not suggest any standard solution about the right number of distinct neighbours to use in implementing PSM. In general, there is a trade-off between variance (limited by the use of a higher number of neighbours) and bias (potentially amplified by the selection of poorer matches; Caliendo and Kopeinig, 2008). Considering the relatively low number of treated units in our sample, we opt for a one-to-ten matching to keep variance relatively low. The matching quality should not be affected by this choice, given the large size of the potential control sample that allows more room for matching.

We choose those presented in the previous paragraph as covariates; they represent performance and structural firm characteristics that we believe best fit the acquisition process. In our choice of covariates we follow the suggestions of the literature reviewed in the introduction: we choose performance variables that allow us to control for bias due to positive (or negative) selection. We also add a set of covariates for firms' characteristics that could drive the acquisition choice when it aims at exploiting some complementarities between a foreign and a domestic firm (Guadalupe et al., 2012).[12]

We also add controls for sector effects (a full set of dummies for the groups of industries presented in graph 1), and per capita GDP of the area where the firm is located. In order to smooth the value of the pre-acquisition covariates chosen to find appropriate controls, we consider 2007-09 averages. The probit model of foreign acquisition can be represented as follows:

$$p_i = Pr(D_i = 1|X_i) = \Phi(X_i'\beta + \varepsilon_i) \qquad (1)$$

where D_i is a binary variable describing treatment status: D=1 if the firm i becomes an MNE, and D=0 otherwise; X_i is a vector of observable characteristics in the three years before the acquisition, and Φ is a standard normal cumulative distribution function. Then we calculate the predicted probability of switching (propensity score) from domestic to foreign-controlled and we create a sample where for each foreign-controlled (treated) firm there are ten purely domestic firms (matched counterfactual) having a very similar ex-ante probability of becoming foreign-owned.

The last step of our strategy is to compare treated firms and controls after the acquisition of the treated ones using difference-in-differences (DID). We con-

[12] For example, a firm with a good distribution network and high production costs may search for a partner with low production costs due to long production experience. In this case, structural variables like age (high) and intangible assets (low) may be relevant for the selection.

sider 2010-2013 as post-acquisition time.[13]

For each performance variable, we estimate an equation including year, firm fixed effects and a set of time-variant controls on the geographical area and industry of the firm, to take account of possible different trends among sectors or geographical areas. Panel data help to control for the unobservable non-random elements of the acquisition decision that are constant over time. The baseline estimated equation is:

$$\text{performance}_{it} = \alpha + \beta * \text{FDI}_i * \text{post}_t + \text{year FE} + \text{firm FE} + \text{sector}_i * \text{trend}_t + \text{area}_i * \text{trend}_t + u_{it} \quad (2)$$

where

i = firm; t = time

FDI = 1 for i = foreign- acquired and 0 otherwise

post = 1 for t ≥ 2010 and 0 otherwise

sector = firm's sector (see table a1)

area = firm's geographical location (see table a1)

trend = 1,2,3... for the time span considered in the equation

A different approach for dealing with the potential endogeneity of the ownership variable is to use instrumental variables (Benfratello and Sembenelli, 2006, among others). The papers that use this methodology focus on productivity (TFP) as an outcome variable, and this allows them to exploit structural functional forms (a Cobb-Douglas production function) in the analysis. Since our examination extends to a large set of economic performance indicators, there is much less a priori theoretical ground for the assumptions on the form of the estimating equations, and therefore DID is our preferred choice.

4. Results

4.1 Propensity score matching

As a first step for propensity score matching, we estimate the probability of being foreign- acquired using a probit model. Table 1 presents the results of the probit model in equation (1).

[13] The choice to consider 2010 as the post-acquisition year is somewhat arbitrary; however, as our analysis also considers the FOP effects for each year after the acquisition (see table 5), we believe that this choice should not affect the results..

All the covariates are significant at 1%, supporting the assumption that size, profitability, the financial situation and the structural indicators chosen influence the acquisition decision.

Table 1 – Probit model: probability of being acquired in 2010 using 2007-09 variables

Variables	Coefficients	Standard error
log(net sales)	0.169***	0.009
vadded labour	-0.037***	0.009
ROE rank	-0.003***	0.001
fdebt asset	-0.170***	0.064
intangible assets	-0.423***	0.157
vertical integration	0.320***	0.067
age	-0.009***	0.001
GDP	0.000***	0.000
chemicals	0.155*	0.094
construction	-0.260***	0.094
traditional manuf.	0.020	0.084
metalworking	0.087	0.080
primary sector	0.405***	0.118
firm services	0.155*	0.081
consumer serv.	0.262***	0.074
utilities	-0.166	0.160
constant	-5.489***	0.134

*** p<0.01, ** p<0.05, * p<0.1. Number of observations: 392,254. The first eight variables are 2007-09 means. See Table a1 for a complete description of the variables.

PSM provides a robust and reliable control sample for estimating the foreign acquisition effect if the pre-acquisition variables are balanced between the acquired and the non-acquired groups. The balancing property implies that the control group produced by PSM has a distribution of covariates very similar to that in the treated group. Table 2 shows the mean values of treated firms and controls both in the full sample and in the post-PSM sample, and the results of a simple t-test on the mean value differences of the performance variables of the two groups of firms.

The third column shows that, before matching, size (net sales) and age are significantly larger for treated firms than for the rest of the sample, while the value added/labour ratio and profitability are lower. At the same time, there is no ex-ante important difference in the financial structure and in the importance of intan-

gible assets. After matching, the differences in means are significantly reduced: the hypothesis that the difference in covariate means of treated firms and controls is null cannot be rejected. At the bottom of the table we also report the growth rates of the outcome variables, both for treated firms and controls in the pre-treatment period. After matching, the t-test shows that the assumption of similar mean growth rates cannot be rejected, supporting the common trend assumption required by DID methodology.

Table 2 – Comparisons between full sample, treated firms and controls; means for 2007-09

Variables	Full sample				Propensity score matching sample			
	Mean		Difference in means		Mean		% Bias	Difference in means
	Treated	Control			Treated	Control		
log(net sales)	8.01	6.89	1.12	***	8.01	8.08	-4.5	-0.07
vadded labour	1.64	2.14	-0.50	***	1.64	1.72	-3,4	-0.08
ROE rank	46.45	51.01	-4.57	***	46.45	46.73	-1.1	-0.28
fdebt asset	0.22	0.22	-0.01		0.22	0.22	-2.7	-0.01
intangible assets	0.04	0.04	0.00		0.04	0.04	2.5	0.00
vertical integration	0.29	0.31	-0.03	***	0.29	0.28	-1.4	0.00
age	14.60	13.19	1.41	***	14.60	14.45	-1.3	0.15
GDP	32,282	27,3311	4,951	***	32,282	32,15	2.3	131
chemicals	0.05	0.03	0.02		0.05	0.05	0.7	0.00
construction	0.03	0.04	-0.01		0.03	0.04	-2.6	-0.01
traditional manuf.	0.08	0.11	-0.03		0.08	0.07	0.9	0.00
metalworking	0.13	0.11	0.02		0.13	0.12	1.1	0.00
primary sector	0.02	0.01	0.00		0.02	0.02	-3.1	0.00
firm services	0.11	0.10	0.01		0.11	0.10	1.5	0.00
consumer serv.	0.56	0.41	0.14		0.56	0.55	0.8	0.00
utilities	0.01	0.01	0.00		0.01	0.01	-1.3	0.00
2007-09 % Growth rates of performance variables								
net sales	-5.92	-11.93	-6,01	**	-5.92	-3.35		-2.57
ROE rank	-11.25	-5.98	-5,27	***	-11.25	-9.03		-2.22
cash asset rank	-4.94	-1.45	-3.49	***	-4.94	-3.55		-1.39
fdebt asset	-0.49	11.71	12,2	**	-0.49	9.18		-9.67
score	8.28	5.02	-3,26	***	8.28	8.51		-0.23

Firms are observed in the three years before acquisition. Differences in means are accompanied by a t-test to document significant differences between the treated firms and the matched control subset; the standardized bias is defined as the difference of sample means in the treated and matched control subsample as a percentage of the square root of the average of sample variances in both groups. *** p<0.01, ** p<0.05, * p<0.1.

The balancing property is confirmed by the size of the standardized bias (at most 4.5% for net sales) as suggested by Rosenbaum and Rubin (1985). For each covariate it is defined as the difference of sample means in the treated and matched subsamples as a percentage of the square root of the average of sample variances in both groups.

Even though there is no clear threshold for establishing the success of the matching procedure, a standardized bias of around 5% or less is considered acceptable (Caliendo and Kopeinig, 2008). The balancing property is supported by the result of the Hotelling T^2 test of the joint significance of differences in means (see Table a2).

Lastly, we verified "common support", which is the overlap between values of X for the comparison groups (treated and controls), confirming our a priori assumption that the large sample from which controls are selected would ensure it.[14]

4.2 Difference-in- differences

As mentioned in the introduction, our analysis focuses on a set of selected balance sheet indicators, which allow us to investigate the effect of FDI on three different features of firm performance: size, profitability, and financial soundness. Specifically, we considered net sales as a proxy for size, ROE and cash flow on assets as measures of profitability, and financial debt on assets together with a score (a comprehensive credit risk indicator obtained by linear discriminant analysis with lower values indicating safer firms) as measures of financial soundness.[15] Both ROE and cash flow on assets are measured as a percentile rank. For the last two variables we expect a negative sign of the coefficients, while we expect positive signs for all the other variables.

Before implementing a difference-in-differences estimate, as a robustness check, we test the DID common trend assumption using pre-treatment data (2007-09).[16] The test is carried out by estimating two placebo experiments that artificially move the acquisition year from 2010 to 2008 (the first one) and to 2009 (the second one, Waldinger, 2012). The estimated equations have the following structure:

$$\text{performance}_{it} = \alpha + \beta * \text{FDI}_{i*}\ \text{placebo}_t + \text{year FE} + \text{firm FE} + \text{sector}_i*\text{trend}_t + \text{area}_i*\text{trend}_t + u_{it} \quad (3)$$

[14] We used the Stata routine psmatch2 to implement the matching and to verify the common support assumption.

[15] See Table a1 for a description of the variables.

[16] The common trend assumption is that, in the absence of the acquisition, treated firms and controls would have followed the same trend.

where

i = firm; t = time (2007, 2008, 2009)
FDI = 1 for i = foreign-acquired and 0 for the matched controls
placebo = 1 for t ≥ 2008 in the first placebo test and 0 otherwise
placebo = 1 for t = 2009 in the second placebo test and 0 otherwise
sector, area, trend as defined in equation (2)

The results reported in Table 3 shows that the β coefficients in the regressions (3) are not significant, excluding the existence of an ex-ante divergent trend of future treated firms compared to the matched controls.

Table 3 – Placebo tests for common trend (1)

Variables	log (net sales)	ROE rank	cash asset rank	fdebt asset	score
	first regression: moving acquisition to 2008				
FDI*placebo$_{2008,2009}$	**-0.030**	**-1.117**	**-0.182**	**-0.006**	**-0.028**
	(0.018)	(1.285)	(0.541)	(0.008)	(0.055)
constant	**8.190*** **	**57.970*** **	**8.341*** **	**0.198*** **	**4.427*** **
	(0.009)	(0.571)	(0.236)	(0.003)	(0.025)
firm FE	Y	Y	Y	Y	Y
year FE	Y	Y	Y	Y	Y
sector/area trend	Y	Y	Y	Y	Y
obs.	20,227	19,233	20,227	20,227	20,227
	second regression: moving acquisition to 2009				
FDI*placebo$_{2009}$	**-0.016**	**-2.139**	**-0.876**	**0.003**	**0.005**
	(0.020)	(1.346)	(0.593)	(0.007)	(0.057)
constant	**8.193*** **	**57.73*** **	**8.177*** **	**0.200*** **	**4.435*** **
	(0.009)	(0.637)	(0.262)	(0.004)	(0.027)
firm FE	Y	Y	Y	Y	Y
year FE	Y	Y	Y	Y	Y
sector/area trend	Y	Y	Y	Y	Y
obs.	20,227	19,233	20,227	20,227	20,227

(1) Robust standard errors (clustered by firm) in parentheses. ***significance at 1%; ** at 5%; * at 10%.

We performed four different exercises using difference-in-differences. The first one is the baseline and simply tests the effect on the five performance variables of being foreign-owned. The second one tests FOP on FDI versus non-FDI for

each year after acquisition, in order to check the timing of the effect of foreign acquisition on performance. The third exercise examines the possible differences in FOP between manufacturing and services. The last one (discussed in the section dedicated to the robustness checks) looks for differential FOP effects depending on the country of origin of the controlling firm (advanced countries versus tax havens).

Table 4 shows the results of the first exercise: a DID regression based on equation (2). As expected, the foreign ownership premium is significant; the signs for all the performance indicators are consistent with the expected ones.

After acquisition, net sales improve by 7%; profitability increases by 1.8 positions in terms of ROE and 1.7 positions in terms of cash flow on assets (in a ranking of 1 to 100); the level of indebtedness decreases by 2.8 percentage points; the score (a measure increasing in level of riskiness) improves by 0.1 on a scale of 1 to 10.

Table 4 – Difference-in-differences: FDI versus non-FDI (1)

Variables	log (net sales)	ROE rank	cash asset rank	fdebt asset	score
FDI*post	**0.070*** **	**1.800***	**1.691***	**-0.028*** **	**-0.102****
	(0.026)	(0.988)	(0.929)	(0.007)	(0.049)
constant	**8.237*** **	**55.360*** **	**53.64*** **	**0.206*** **	**4.552*** **
	(0.013)	(0.601)	(0.532)	(0.004)	(0.028)
firm FE	Y	Y	Y	Y	Y
year FE	Y	Y	Y	Y	Y
sector/area trend	Y	Y	Y	Y	Y
obs.	44,231	41,375	44,231	44,231	44,231

(1) Firm controls include sector trends and geographical area trends. Robust standard errors (clustered by firm) in parentheses. ***significance at 1%; ** at 5%; * at 10%.

Table 5 shows the results of the second exercise: a DID regression based on the following equation:

$$\text{performance}_{it} = \alpha + \beta_1 \text{FDI}_i*\text{Y2010} + \beta_2 \text{FDI}_i*\text{Y2011} + \beta_3 \text{FDI}_i*\text{Y2012} + \beta_4 \text{FDI}_i*\text{Y2013} + \text{year FE} + \text{firm FE} + \text{sector}_i*\text{trend}_t + \text{area}_i*\text{trend}_t + u_{it} \quad (4)$$

where

i = firm; t= time

FDI = 1 for i = foreign-acquired and 0 otherwise

Y2010 = 1 for t = 2010 and 0 otherwise

Y2011 = 1 for t = 2011 and 0 otherwise

Y2012 = 1 for t = 2012 and 0 otherwise

Y2013 = 1 for t = 2013 and 0 otherwise

sector, area, trend as defined in equation (2)

Table 5 – Difference-in-differences: FDI versus non-FDI each year after acquisition (1)

Variables	log (net sales)	ROE rank	cash asset rank	fdebt asset	score
FDI * Y2010	**0.047****	**-0.456**	**0.186**	**-0.019*****	**-0.010**
	(0.023)	(1.158)	(1.012)	(0.007)	(0.051)
FDI * Y2011	**0.072****	**2.163***	**2.241***	**-0.023*****	**-0.052**
	0.028	(1.311)	(1.159)	(0.008)	(0.056)
FDI * Y2012	**0.070****	**1.388**	**1.902**	**-0.037*****	**-0.182*****
	(0.034)	(1.378)	(1.257)	(0.009)	(0.066)
FDI * Y2013	**0.100*****	**4.995*****	**2.867****	**-0.038*****	**-0.202*****
	(0.037)	(1.450)	(1.372)	(0.009)	(0.071)
constant	**8.240*****	**55.640*****	**53.740*****	**0.206*****	**4.543*****
	(0.012)	(0.598)	(0.528)	(0.004)	(0.028)
firm FE	Y	Y	Y	Y	Y
year FE	Y	Y	Y	Y	Y
sector/area trend	Y	Y	Y	Y	Y
obs.	44,231	41,375	44,231	44,231	44,231

(1) Firm controls include sector trends and geographical area trends. Robust standard errors (clustered by firm) in parentheses. ***significance at 1%; ** at 5%; * at 10%.

The effect of foreign ownership increases over time for all variables. For net sales, the greater effects emerge three years after the acquisition. Improvement in profitability is less steady: coefficients for the ROE rank and for cash flow on the assets rank are at their highest in 2013, but they are not significant in 2010 and 2012. This effect is expected to a certain extent as these variables depend on a large range of company variables: sales, cost structure and financial equilibrium; a certain delay is necessary in order to transmit the improvement of these variables to profits. The financial indicator coefficient is always significant, stays negative and increases in absolute value year after year. Lastly, the score variable, which

can be considered as a comprehensive indicator of economic and financial performance, grows in magnitude and is significant from the third year onwards.

Table 6 shows the impact of the foreign ownership premium across broad industry groups. The DID regression is based on the following equation which presents triple interaction terms; second-order non-collinear factors have been considered too: [17]

$$\begin{aligned} performance_{it} = \alpha + \beta_1\, FDI_i{*}manufacturing_i{*}post_t + \beta_2\, FDI_i{*}services_i{*} \\ post_t + \beta_3\, FDI_i{*}other_i{*}post_t + \beta_4\, manufacturing_i{*}post_t \\ + \beta_5\, services_i{*}\, post_t + \beta_6\, other_i{*}\, post_t + year\ FE + \\ firm\ FE + sector_i{*}trend_t + area_i{*}trend_t + u_{it} \end{aligned} \quad (5)$$

where

i = firm; t= time

FDI = 1 for i = foreign-acquired and 0 otherwise

post = 1 for t ≥ 2010 and 0 otherwise

manufacturing = 1 for manufacturing and 0 otherwise

services = 1 for services and 0 otherwise

other = 1 for firms in the residual sectors (primary and construction) and 0 otherwise[18]

sector, area, trend as defined in equation (2)

The β_1, β_2 and β_3 coefficients, which interest us, show that the impact of foreign ownership is not homogeneous across broad groups of industries, being significant in services but not in manufacturing. A possible explanation for this phenomenon could depend on the greater exposure of manufacturing industries to international market discipline that induces greater efficiency. On the other hand, many service branches are regulated and have some forms of barriers to entry that limit efficiency achievements. Therefore foreign acquisition should improve performance more for service sector firms than for manufacturing entities that possibly tend to be nearer to the efficiency frontier. The results are confirmed if we reapply the PSM + DID procedure as defined in equations (1) and (2) separately from the subsample of manufacturing and from the subsample of service firms; the figures are shown in Tables a3 and a4 in the appendix. Obviously, this approach does not allow us to make a meaningful comparison of the estimations, but it helps us to

[17] The second-order interactions: $FDI_i{*}manufacturing_i$, $FDI_i{*}services_i$ and $FDI_i{*}other_i$ are time-invariant dummies absorbed by a firm's fixed effects; the interaction $FDI_i{*}post_t$ can be obtained as the sum of the three dummies: $FDI_i{*}manufacturing_i{*}post_t$, β_2 $FDI_i{*}services_i{*}post_t$ and β_3 $FDI_i{*}other_i{*}post_t$, given that the three broad industry groups are exhaustive.

[18] They represent 3.75% of the treated sample; see Table a1 for sector definitions.

refine the matching procedure for the purpose of testing the treatment effect separately within each broad industry.

Table 6 – Difference-in-differences: FDI in manufacturing versus FDI in services (1)

Variables	log (net sales)	ROE rank	cash asset rank	fdebt asset	score
FDI * manufacturing * post	**0.040**	**1.064**	**0.682**	**-0.013**	**-0.092**
	(0.050)	(1.762)	(1.743)	(0.014)	(0.105)
FDI * services * post	**0.076****	**2.009**	**2.156***	**-0.032*****	**-0.112***
	(0.032)	(1.224)	(1.115)	(0.008)	(0.056)
FDI * other * post	**0.157**	**2.806**	**0.136**	**-0.069*****	**0.030**
	(0.137)	(4.522)	(4.585)	(0.031)	(0.202)
constant	**8.239*****	**55.620*****	**53.91*****	**0.207*****	**4.519*****
	(0.017)	(0.785)	(0.700)	(0.005)	(0.036)
firm FE	Y	Y	Y	Y	Y
year FE	Y	Y	Y	Y	Y
sector/area trend	Y	Y	Y	Y	Y
manufacturing * post	Y	Y	Y	Y	Y
services * post	Y	Y	Y	Y	Y
other * post	Y	Y	Y	Y	Y
obs.	44,231	41,375	44,231	44,231	44,231

(1) Firm controls include sector trends and geographical area trends. Robust standard errors (clustered by firm) in parentheses. ***significance at 1%; ** at 5%; * at 10%.

4.3 Further robustness checks

As a further check on the existence and the strength of the foreign ownership premium, we test it by grouping treated firms into classes, according to the country of origin of the acquisition. In fact at micro level our dataset shows a significant share of foreign investors located in countries that provide fiscal or legal benefits. Anecdotal evidence indicates that in many cases the ultimate control subject of these entities is domestic, and the 'foreign investor' is only a shell company created in a fiscal haven just for fiscal or legal reasons. Consequently, this kind of business does not imply any true acquisition: thus in this case we do not expect any foreign ownership premium.

Unfortunately, we cannot test our assumption directly on 'vested foreign investors' because our dataset does not allow us to detect the ultimateinvestor. In any case, even if the assumption on tax havens is true only in part, we can use it to

test the robustness of FOP. Assuming the existence of 'vested foreign investors' implies that a fraction of our treated sample has not really been treated; thisfraction is concentrated among the firms controlled by foreign owners located in tax havens. By interacting the treatment variable with a dummy for tax havens, we are in fact carrying out a falsification test on FOP as, in this case, the treatment is mostly a false treatment and then we expect the absence of a premium.

We create three dummy variables: the first one assumes value 1 if the company is treated and the country of origin of the participation is an 'advanced' one (0 otherwise); the second assumes value 1 if the company is treated and the country of origin of participation can be considered a tax haven (0 otherwise); the third one assumes value 1 if the company is treated and the participation comes from a country not considered before (0 otherwise; this group represents 2.93% of the treated sample). The sum of the three dummies gives exactly the treatment variable (FDI). The regression takes the following form:

$$\begin{aligned} performance_{it} = {} & \alpha + \beta_1\, advanced_i{*}post_t + \beta_2\, havens_i{*}post_t + \\ & \beta_3\, other_i{*}post_t + year\ FE + firm\ FE + \\ & sector_i{*}trend_t + area_i{*}trend_t + u_{it} \end{aligned} \qquad (6)$$

where

i = firm; t= time

post = 1 for t ≥ 2010 and 0 otherwise

advanced = 1 for i = foreign-acquired from an advanced country and 0 otherwise

havens = 1 for i = foreign-acquired from a tax haven and 0 otherwise[19]

other = 1 for i = foreign-acquired from other countries and 0 otherwise

sector, area, trend as defined in equation (2)

The results of the regression (table 7) show that FOP is not significant for any performance variable when the acquisition comes from a tax haven. On the contrary, controlling entities from advanced countries produce real and financial improvements in the acquired firms.

The findings discussed so far are based on a selection of variables for PSM that include performance and structural firm characteristics that we believe best fit the acquisition process and influence the outcome. This follows a general trend of the literature, which suggests including variables correlated with both the

[19] See Table a1 for details.

treatment and the outcome. However, the set of performance variables used is slightly different from that considered as the outcome in the DID estimation.

Table 7 – Difference-in-differences: FDI from advanced countries/from tax havens (1)

Variables	log (net	ROE rank	cash asset rank	fdebt asset	score
advanced*post	**0.101*** **	**1.952***	**2.070***	**-0.030*** **	**-0.154*** **
	(0.027)	(1.152)	(1.111)	(0.008)	(0.057)
havens*post	**0.017**	**1.871**	**1.141**	**-0.020**	**0.023**
	(0.068)	(1.926)	(1.715)	(0.014)	(0.096)
other*post	**-0.031**	**-0.005**	**-1.373**	**-0.039**	**0.128**
	(0.288)	(5.105)	(3-313)	(0.0340)	(0.205)
constant	**8.237*** **	**55.37*** **	**53.64*** **	**0.206*** **	**4.551*** **
	(0.013)	(0.602)	(0.533)	(0.004)	(0.028)
firm FE	Y	Y	Y	Y	Y
year FE	Y	Y	Y	Y	Y
sector/area trend	Y	Y	Y	Y	Y
obs.	44,231	41,375	44,231	44,231	44,231

(1) Firm controls include sector trends and geographical area trends. Robust standard errors (clustered by firm) in parentheses. ***significance at 1%; ** at 5%; * at 10%.

Even if there is no common point of view in the literature about the requirement of coincidence between covariates in PSM and outcomes in DID, we propose an alternative estimation of our baseline as a robustness test, using all the outcome variables considered in the DID estimation as covariates for PSM. Thus we re-estimate equation (1) using an alternative X_i vector of observables that includes the 2007-2009 means of our five performance indicators (log net sales, ROE rank, cash asset rank, fdebt asset and score) plus controls for sector effects, and then our baseline equation (2) using the new control sample obtained. Table 8 shows results consistent with the previous ones.

The choice of the matching methodology applied for all the estimates presented in the paper may appear somewhat arbitrary. In order to test the robustness of our results under a different matching procedure, we redo the PSM using the same variables of the main exercise and replacing the one-to-ten nearest neighbour matching with a one-to-ten caliper matching. The caliper method restricts the matching to a maximum distance between the treated and the matched

control and, as outlined by Borin and Mancini (2015), can be applied to impose an exact industry match too.[20]

Table 8 – Difference-in-differences: FDI versus non FDI. Alternative matching (1)

Variables	log (net sales)	ROE rank	cash asset rank	fdebt asset	score
FDI*post	**0.063****	**2.391****	**1.663***	**-0.026*****	**-0.170*****
	(0.029)	(0.965)	(0.923)	(0.0072)	(0.050)
constant	**8.196*****	**54.72*****	**52.70*****	**0.203*****	**4.419*****
	(0.012)	(0.593)	(0.529)	(0.004)	(0.028)
firm FE	Y	Y	Y	Y	Y
year FE	Y	Y	Y	Y	Y
sector/area trend	Y	Y	Y	Y	Y
obs.	45,760	43,225	45,760	45,760	45,760

(1) Firm controls include sector trends and geographical area trends. Robust standard errors (clustered by firm) in parentheses. ***significance at 1%; ** at 5%; * at 10%.

The DID procedure implemented on a sample obtained using the caliper method and imposing the matching within sectors[21] confirms the results already discussed in paragraph 4.2 (see Tables a5-a7 in appendix).

5. Conclusions

The main stream of theoretical literature on foreign acquisition emphasizes the superior technical and managerial skills that multinationals transfer to acquired firms. This process, in turn, generates a foreign ownership premium (FOP) that materializes through the improvement of the acquired firm's performance.

In order to test this theoretical argument empirically it is necessary to rule out the possibility that the different performances of foreign-acquired firms, compared with purely domestic ones, is simply due to an ex-ante selection bias.

Using PSM combined with a difference-in-differences methodology to control for the possible ex-ante selection bias, we find that the performance of domestic firms improves after FDI. In order to identify the covariates to control for, we

[20] As suggested by the literature, the caliper was set equal to one-fifth of the standard deviation of the propensity score.
[21] See Table a1for details about the sectors.

exploited the literature on selection processes. These variables are, in turn, the ones relevant for MNEs' investment choices.

A foreign ownership premium is present in all three characteristics considered for a firm's performance: size, profitability, and financial soundness. The effects increase over time, indicating that the transmission of knowledge and organizational and managerial changes is a slow process.

The effect of FDI on performance is only significant for service firms; this sector is generally more sheltered from international market discipline, leaving greater room for performance improvement than for industrial firms.

Lastly, FOP is not significant for any performance variable when the FDI comes from a tax haven. Assuming the existence of a significant number of 'vested foreign investors' concentrated in tax havens, we consider this result a falsification test: only 'true' acquisitions generate FOP, while shell companies with parent companies located in tax havens do not actually affect performance.

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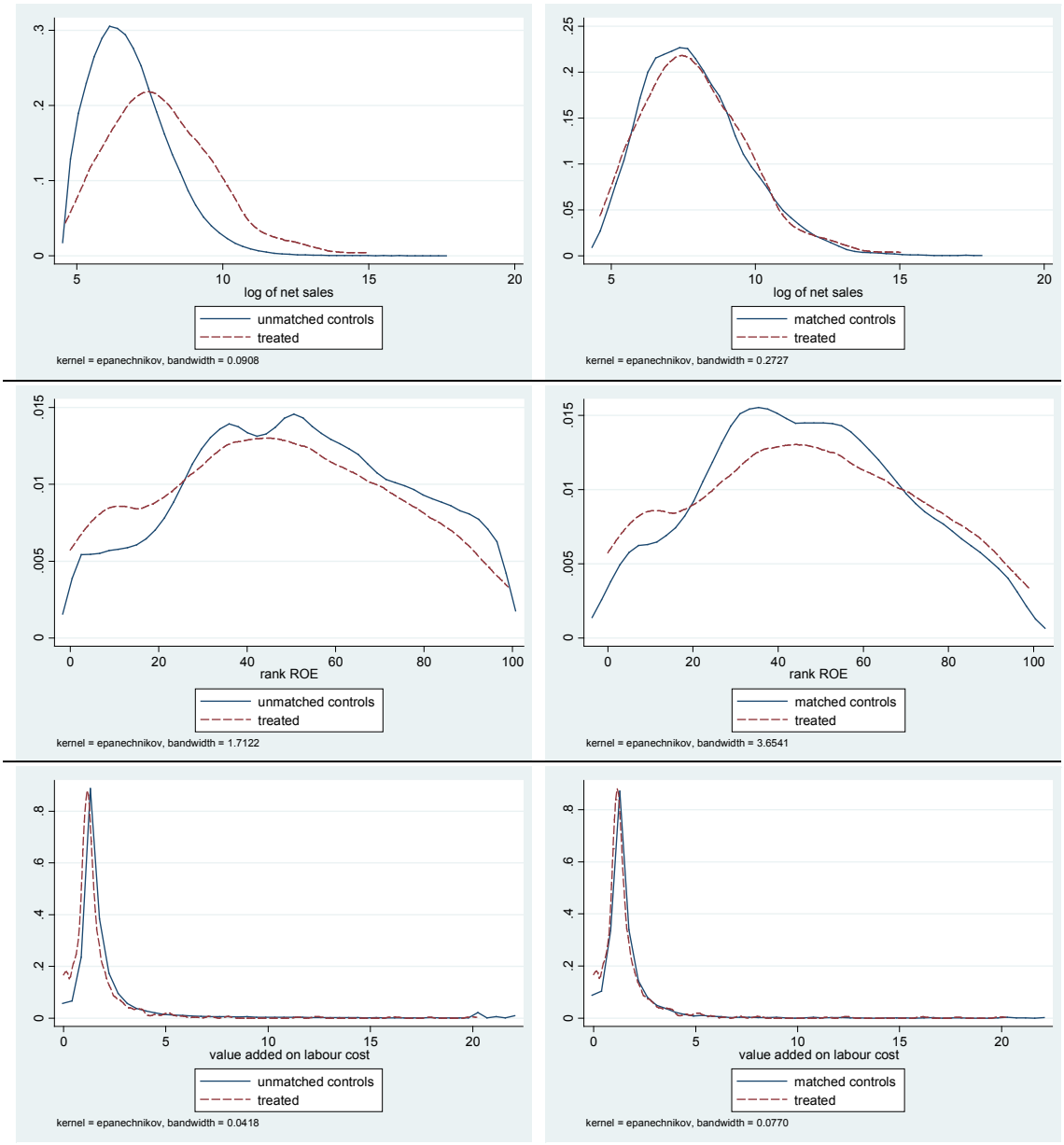
Appendix

Table a1 – Variables description

Variable name	Description [source]	
FDI	Dummy equal to 1 if the firm is foreign-owned for the first time in 2010 (treated) and 0 if is not foreign-owned from 2007 to 2013 [Infocamere]	
log (net sales)	Log of net sales [Cerved]	
ROE rank	Return on equity (rank centiles) [Cerved]	
vadded labour	Value added to labour cost [Cerved]	
fdebt asset	Financial debt on assets [Cerved]	
intangible assets	Intangible assets/total assets [Cerved]	
vertical integration	Value added/net sales [Cerved]	
age	Firm's age [Cerved]	
score	Z-score; it is a measure of credit risk obtained by linear discriminant analysis; value range is 1 to 10, with lower values indicating safer firms and higher values risky firms [Cerved]	
cash asset rank	Cash flow on assets (rank centiles) [Cerved]	
GDP	Per-capita GDP in the province where the firm is located	
sector (1..9)	2-digits NACE Rev. 2 classification:	
	1 Other serv. = 84-99 2 Chemicals = 19-23 3 Construction = 41-43 4 Traditional manuf.= 10-18, 31-33 5 Metalworking = 24-30	6 Primary sector = 01-09 7 Firm services = 69-82 8 Consumer serv. = 45-63 9 Utilities = 35-39
area	1 North West 2 North East	3 Centre 4 South
manufacturing, services	manufacturing= sectors 2, 4, 5, 9 services= sectors 1, 7, 8 other= sectors 3, 6	
country type (countries selected are those included in the dataset)	Advanced = Austria, Belgium, Bulgaria, Canada, Czech Republic, Cyprus, Croatia, Denmark, Finland, France, Germany, Japan, Gibraltar, Greece, Ireland, Israel, Lithuania, Malta, Norway, Netherlands, Poland, Portugal, United Kingdom, Romania, Singapore, Spain, United States, Sweden, Hungary	Tax havens = Liechtenstein, Luxembourg, Panama, San Marino, Switzerland

Graph a1 – Kernel density estimates of covariates distribution, averages 2007-09 - pre and post-matching

pre-matching *post-matching*



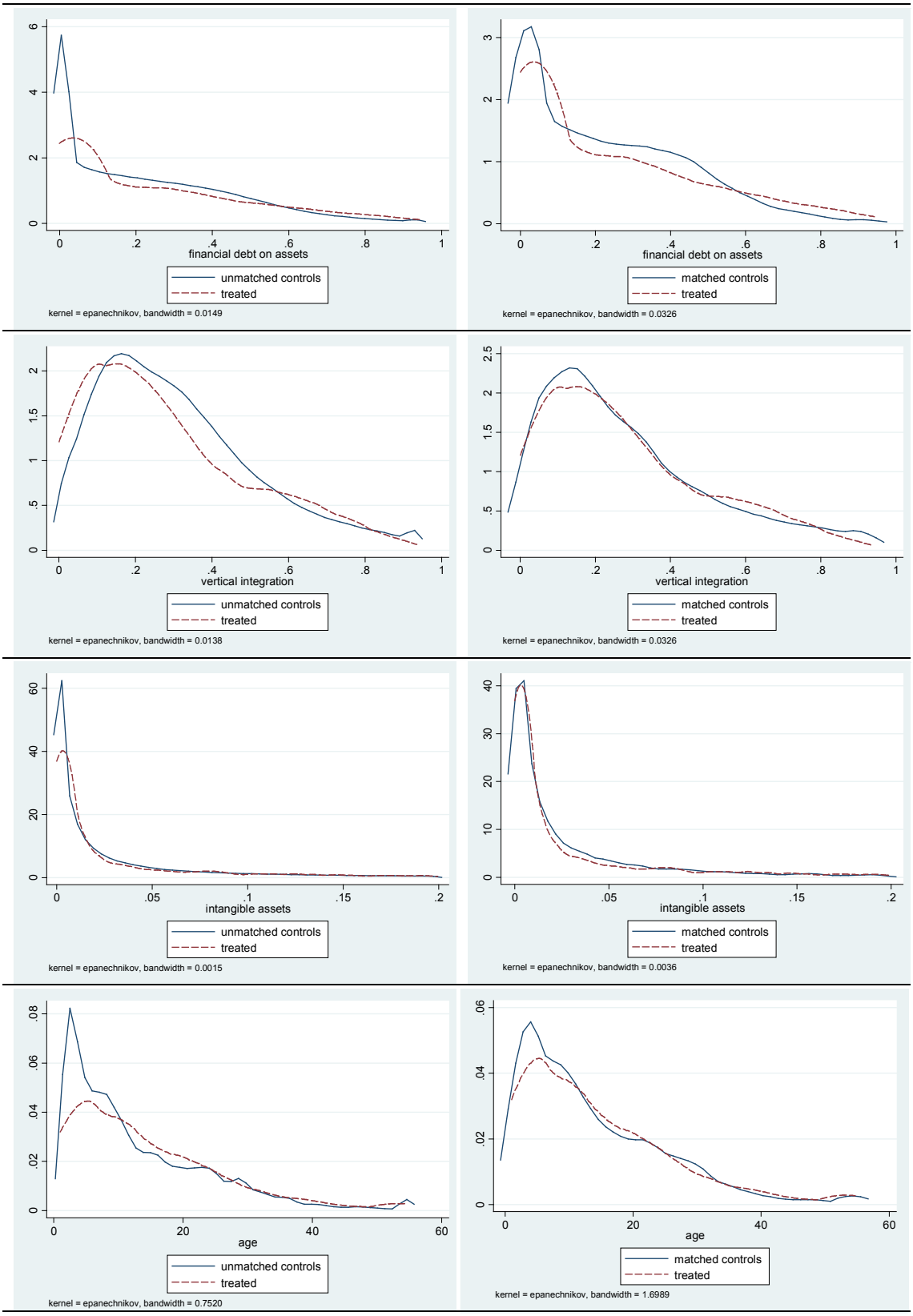

financial debt on assets
unmatched controls
treated
kernel = epanechnikov, bandwidth = 0.0149
financial debt on assets
matched controls
treated
kernel = epanechnikov, bandwidth = 0.0326
vertical integration
unmatched controls
treated
kernel = epanechnikov, bandwidth = 0.0138
vertical integration
matched controls
treated
kernel = epanechnikov, bandwidth = 0.0326
intangible assets
unmatched controls
treated
kernel = epanechnikov, bandwidth = 0.0015
intangible assets
matched controls
treated
kernel = epanechnikov, bandwidth = 0.0036
age
unmatched controls
treated
kernel = epanechnikov, bandwidth = 0.7520
age
matched controls
treated
kernel = epanechnikov, bandwidth = 1.6989

Table a2 – Propensity score matching: Hotelling T-squared test (1)

Sample	Hotelling P-value
treated vs unmatched	0.000
treated vs matched	0.979

(1) H_0: difference between covariates means jointly null.

Table a3 – Difference-in-differences: FDI versus non-FDI - manufacturing (1)

Variables	log (net sales)	ROE rank	cash asset rank	fdebt asset	score
FDI*post	**0.018**	**1.771**	**0.626**	**-0.013**	**-0.068**
	(0.049)	(1.742)	(1.737)	(0.014)	(0.103)
constant	**8.892*** **	**54.010*** **	**55,440*** **	**0.241*** **	**4.400*** **
	(0.022)	(1.005)	(0.969)	(0.009)	(0.060)
firm FE	Y	Y	Y	Y	Y
year FE	Y	Y	Y	Y	Y
sector/area trend	Y	Y	Y	Y	Y
obs.	11,920	11,334	11,920	11,920	11,920

(1) Firm controls include sector trends and geographical area trends. Robust standard errors (clustered by firm) in parentheses. ***significance at 1%; ** at 5%; * at 10%.

Table a4 – Difference-in-differences: FDI versus non-FDI services (1)

Variables	log (net sales)	ROE rank	cash asset rank	fdebt asset	score
FDI*post	**0.076****	**2.517*****	**2,624****	**-0.031*****	**-0.159****
	(0.032)	(1.241)	(1.135)	(0.008)	(0.057)
constant	**8.060*****	**55.980*****	**53.550*****	**0.182*****	**4.564*****
	(0.016)	(0.759)	(0.648)	(0.005)	(0.032)
firm FE	Y	Y	Y	Y	Y
year FE	Y	Y	Y	Y	Y
sector/area trend	Y	Y	Y	Y	Y
obs.	30,472	28,263	30,472	30,472	30,472

(1) Firm controls include sector trends and geographical area trends. Robust standard errors (clustered by firm) in parentheses. ***significance at 1%; ** at 5%; * at 10%.

Table a5 – Difference-in-differences: FDI versus non-FDI (1) *– caliper matching*

Variables	log (net sales)	ROE rank	cash asset rank	fdebt asset	score
FDI*post	**0.099*****	**1.734***	**1.566***	**-0.028*****	**-0.118****
	(0.026)	(0.980)	(0.935)	(0.007)	(0.049)
constant	**8.491*****	**52.95*****	**52.63*****	**0.212*****	**4.411*****
	(0.012)	(0.570)	(0.513)	(0.004)	(0.028)
firm FE	Y	Y	Y	Y	Y
year FE	Y	Y	Y	Y	Y
sector/area trend	Y	Y	Y	Y	Y
obs.	43,269	41,167	43,269	43,269	43,269

(1) Firm controls include sector trends and geographical area trends. Robust standard errors (clustered by firm) in parentheses. ***significance at 1%; ** at 5%; * at 10%.

Table a6 – Difference-in-differences: FDI versus non-FDI each year after acquisition - caliper matching (1)

Variables	log (net sales)	ROE rank	cash asset rank	fdebt asset	score
FDI * Y2010	**0.064*** **	**0.161**	**0.825**	**-0.018** **	**0.003**
	(0.023)	(1.142)	(1.009)	(0.007)	(0.052)
FDI * Y2011	**0.104*** **	**2.405***	**2.099***	**-0.023*** **	**-0.058**
	(0.028)	(1.300)	(1.164)	(0.008)	(0.057)
FDI * Y2012	**0.109*** **	**0.728**	**0.943**	**-0.035*** **	**-0.239*** **
	(0.034)	(1.370)	(1.266)	(0.009)	(0.066)
FDI * Y2013	**0.130*** **	**4.250*** **	**2.642***	**-0.041*** **	**-0.223*** **
	(0.037)	(1.439)	(1.377)	(0.009)	(0.072)
constant	**8.493*** **	**53.15*** **	**52.72*** **	**0.211*** **	**4.403*** **
	(0.012)	(0.568)	(0.510)	(0.004)	(0.027)
firm FE	Y	Y	Y	Y	Y
year FE	Y	Y	Y	Y	Y
sector/area trend	Y	Y	Y	Y	Y
obs.	43,269	41,167	43,269	43,269	43,269

(1) Firm controls include sector trends and geographical area trends. Robust standard errors (clustered by firm) in parentheses. ***significance at 1%; ** at 5%; * at 10%.

Table a7 – Difference-in-differences: FDI in manufacturing versus FDI in services - caliper matching (1)

Variables	log (net sales)	ROE rank	cash asset rank	fdebt asset	score
FDI * manufacturing*post	**0.069**	**0.856**	**0.524**	**-0.011**	**-0.071**
	(0.049)	(1.762)	(1.756)	(0.014)	(0.105)
FDI * services*post	**0.106*** **	**2.061***	**2.058***	**-0.032*** **	**-0.141** **
	(0.032)	(1.212)	(1.126)	(0.008)	(0.057)
FDI * other*post	**0.175**	**1.785**	**-0.174**	**-0.065** **	**-0.003**
	(0.141)	(4.380)	(4.525)	(0.031)	(0.205)
constant	**8.488*** **	**52.58*** **	**52.25*** **	**0.215*** **	**4.443*** **
	(0.013)	(0.613)	(0.546)	(0.004)	(0.029)
firm FE	Y	Y	Y	Y	Y
year FE	Y	Y	Y	Y	Y
sector/area trend	Y	Y	Y	Y	Y
manufacturing*post	Y	Y	Y	Y	Y
services*post	Y	Y	Y	Y	Y
other*post	Y	Y	Y	Y	Y
obs.	43,269	41,167	43,269	43,269	43,269

(1) Firm controls include sector trends and geographical area trends. Robust standard errors (clustered by firm) in parentheses. ***significance at 1%; ** at 5%; * at 10%.

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